Akinleye Temitope Olaoluwa 300L

Epidemiology and Communicable Disease

<u>Assignment</u>

1. Communicable Diseases

<u>Definition</u>

Communicable diseases are illnesses caused by infectious agents that can be transmitted directly or indirectly from one person, animal, or object to another. They result from the interaction between the host, the infectious agent, and the environment.

<u>Causative Agents</u>

Communicable diseases are caused by various microorganisms, including:

Bacteria (e.g., Mycobacterium tuberculosis → Tuberculosis)

Viruses (e.g., HIV, Influenza virus)

Fungi (e.g., Candida albicans)

Protozoa (e.g., Plasmodium spp. → Malaria)

Helminths (worms) (e.g., Ascaris lumbricoides)

<u>Modes of Transmission</u>

a. **Direct Transmission;**

Person-to-person contact (e.g., HIV, COVID-19)

Droplet infection (e.g., Influenza)

Contact with body fluids or lesions

b. **Indirect Transmission;**

Airborne (e.g., Tuberculosis)

Vehicle-borne (e.g., contaminated food, water)

Vector-borne (e.g., malaria via mosquito)

Fomite transmission (via objects like towels or door handles)

Methods of Prevention and Control

Immunization (e.g., measles, polio vaccines)

Personal hygiene (handwashing, safe sex)

Environmental sanitation (proper waste disposal, clean water)

Vector control (use of insecticide-treated nets, fumigation)

Isolation and quarantine of infected persons

Health education and public awareness campaigns

---

2. Endemic, Epidemic, and Pandemic

Endemic

A disease constantly present within a particular geographic area or population.
Example: Malaria in many parts of Sub-Saharan Africa.

Epidemic

A sudden increase in the number of disease cases above what is normally expected in a community or region.
Example: Cholera outbreak in Nigeria.

Pandemic

An epidemic that has spread across countries or continents, affecting a large number of people worldwide.
Example: COVID-19 pandemic (2019–present).

---

3. Incidence and Prevalence

Incidence

Refers to the number of new cases of a disease that occur in a specified population during a defined period.

Prevalence

Refers to the total number of existing cases (both new and old) of a disease in a population at a given time.
Formula:

Importance in Epidemiology

Incidence helps in identifying risk and new infections — useful for studying causes.

Prevalence helps in planning healthcare resources and measuring disease burden.

---

4. **Measures for Controlling Communicable Diseases at the Community Level**

1. Health Education – Teaching people about hygiene, sanitation, and disease prevention.

2. Immunization Programs – Routine and mass vaccinations.

3. Environmental Sanitation – Safe water supply, waste management, and clean surroundings.

4. Surveillance and Reporting – Early detection and prompt response to outbreaks.

5. Isolation and Quarantine – To prevent disease spread.

6. Vector Control – Using insecticides, eliminating breeding sites.

7. Legislation and Policy Enforcement – Laws on food safety, waste disposal, and vaccination.

---

5. Short Notes

a. **Epidemiological Triangle**

The model explaining the interaction between three key elements in disease causation:

Agent: The microorganism that causes disease (e.g., bacteria, virus).

Host: The person or animal that can be infected.

Environment: External factors that allow the agent and host to interact (e.g., climate, sanitation).
→ The balance among these determines disease occurrence.

b. **Vehicle-Borne Transmission**

Occurs when an infectious agent is transmitted through a contaminated inanimate object or substance.
Examples:

Contaminated food → Food poisoning

Contaminated water → Cholera

Contaminated blood → Hepatitis B

c. **Point Prevalence and Period Prevalence**

Point Prevalence: The proportion of individuals with a disease at a specific point in time.
Example: Number of people with malaria on October 30, 2025.

Period Prevalence: The proportion of individuals who have had the disease during a specified period (e.g., over 6 months).
Example: Number of malaria cases between January and June 2025